

PATENT COOPERATION TREATY

TRANSLATION

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

Date of mailing (day/month/year) **See form PCT/ISA/210**

Applicant's or agent's file reference

LeA 36906-WO

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/EP2005/000577

International filing date (day/month/year)

21.01.2005

Priority date (day/month/year)

23.01.2004

International Patent Classification (IPC) or both national classification and IPC

C08G18/02, C08G18/18, C08G18/79, C09D127/06

Applicant

LANXESS DEUTSCHLAND GMBH

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/EP

Authorized officer

Facsimile No.

Telephone No.

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Box No. I

Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

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Box No. II

Priority

1. ☐ The following document has not yet been furnished:

☐ copy of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(a)).

☐ translation of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date in the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43bis.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

The validity of the priority claim has not been considered because the International Searching Authority does not have in its possession a copy of the earlier application whose priority has been claimed or, where required, a translation of that earlier application. This opinion has nevertheless been established on the assumption that the relevant date (Rules 43bis.1 and 64.1) is the claimed priority date.

**WRITTEN OPINION OF THE
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Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | |
|-------------------------------|-------------------|-----|
| Novelty (N) | Claims <u>1-7</u> | YES |
| | Claims _____ | NO |
| Inventive step (IS) | Claims <u>1-7</u> | YES |
| | Claims _____ | NO |
| Industrial applicability (IA) | Claims <u>1-7</u> | YES |
| | Claims _____ | NO |

2. Citations and explanations:

1. Reference is made to the following documents:

D1: DE 102 29 780 A1 (BAYER AG) 15 January 2004
(2004-01-15)

D2: DE 30 41 732 A1 (BAYER AG) 9 June 1982
(1982-06-09)

D3: US-A-4 115 373 (HENES ET AL) 19 September 1978
(1978-09-19)

D4: DE 24 19 016 A1 (IMPERIAL CHEMICAL INDUSTRIES
LTD., LONDON) 14 November 1974 (1974-11-14)

D5: EP-A-1 378 530 (BAYER MATERIALSCIENCE AG)
7 January 2004 (2004-01-07)

D6: DE 39 20 325 A1 (SUNSTAR GIKEN K.K.,
TAKATSUKI, OSAKA, JP; SUNSTAR GIKEN K.K.,
TAKATSUK) 28 December 1989 (1989-12-28)

2. Novelty

The present application relates to a process for preparing tolylene diisocyanate-based isocyanurate-polyisocyanate solution, in which an isomer mixture of tolylene diisocyanate having a content of 2,6-TDI of < 35% by weight (B) is trimerized in a dialkyl

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phthalate having branched alkyl groups (A) in the presence of a Mannich base catalyst (C) in the absence of hydroxyl and/or urethane groups (D) until the free TDI content is $\leq 0.2\%$ by weight, the viscosity at 23°C is $< 20\,000$ mPas and the solids content is $> 25\%$ by weight (claim 1).

The present application further relates to the corresponding product (claim 4), to the use of the corresponding products (claim 5), and to the corresponding coatings (claim 6) and coated substrates (claim 7).

In documents D1/D5, the trimerization of TDI takes place in butyl acetate. In document D2, a mixture of different isocyanates is trimerized (examples 7-11, 14), or a TDI isomer mixture having a 2,6-TDI content of 35% by weight is used (example 17). In document D3, a phthalate with unbranched alkyl groups is used (example 7). The solvent used in example 8 of document D3 is unclear. In addition, no isomer mixture is used in examples 7 and 8. In documents D4 and D6, no Mannich base is used as a catalyst.

Consequently, the subject matter of claims 1-7 of the present application is novel over documents D1-D6.

3. Inventive step

Document D2 is considered to be the closest prior

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art.

Document D2 discloses the trimerization of TDI 80 in the presence of MDI (examples 7-11, 14), or TDI 65 (example 17), in the presence of a Mannich base in dioctyl phthalate.

The present application thus differs from the subject matter of document D2 in that an isomer mixture of tolylene diisocyanate having a content of 2,6-TDI of < 35% by weight (B) is used.

The problem of the present application was the provision of TDI trimers as adhesion promoters for PVC plastisols (see page 2 lines 19-28).

This problem was solved by the use of an isomer mixture of tolylene diisocyanate having a content of 2,6-TDI of < 35% by weight (B) (see examples). Comparative example 1 shows that, using TDI 65, no inventive viscosities would be obtained.

This solution is not proposed in document D2 and is also not obvious by virtue of a combination of document D2 with documents D1, D3-D6.

Consequently, the subject matter of claims 1-7 of the present application involves an inventive step over documents D1-D6.